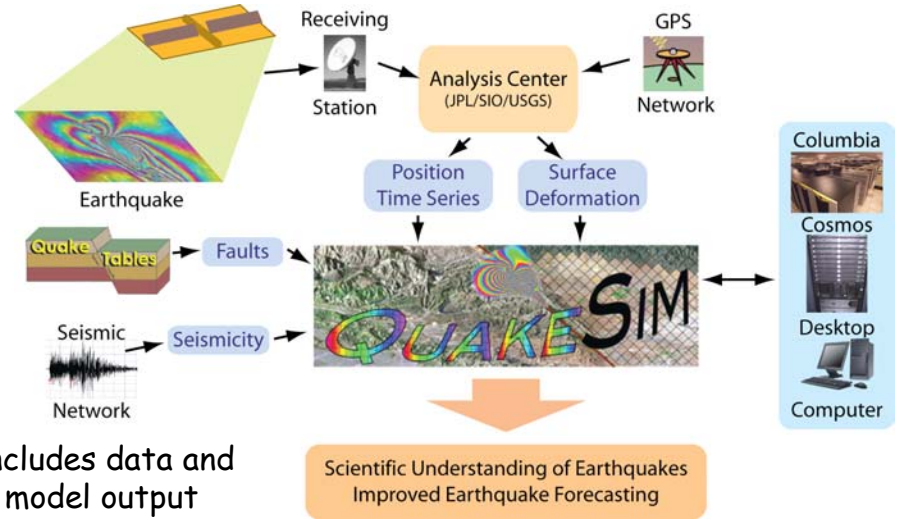
QuakeSim: Enabling Model Interactions in Solid Earth Science Sensor Webs

PI: Andrea Donnellan, JPL

Objective

- Improve the modeling environment for better earthquake forecasts, which will ultimately lead to mitigation of damage from this natural hazard.
- Establish the necessary computational infrastructure
- Develop optimal techniques for understanding the relationship between the observable space-time patterns of earthquakes and the underlying dynamics that are inaccessible or unobservable in nature.

Operational Concept



Includes data and model output

Approach

- Integrate real-time and archival sensor data with high-performance computing applications for data mining and assimilation
- Federate sensor data sources, focusing on InSAR and GPS (Global Positioning System)
- Extend QuakeSim to interact with high-end computing resources at Ames Research Center and JPL.

Co-I's/Partners

John Rundle (UC, Davis)
Geoffrey Fox (Indiana U.)
Dennis McLeod (USC)
Walter Brooks (ARC)
Lisa Grant (UC, Irvine)
Marlon Pierce (Indiana U.)
Terry Tullis (Brown U.)

Key Milestones

• GPS data federated into portal	8/07
• Parallel version of Virtual California (VC) simulation running on Columbia and Cosmos	11/07
• Prototype InSAR database into portal	3/08
• Deployed on Cosmos and Columbia resources	10/08
• Fault database expanded to all of California	3/09
• Integrate Geographic Information System (GIS), Sensor Web, codes, and services	9/09
• Support for GIS and Sensor Web technologies	9/09

TRL_{in} = 3